Recurrent Deglutition Syncope

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Deglutition syncope is an uncommon disorder in which loss of consciousness follows swallowing. The cause appears to be an esophagocardiac vagal reflex that induces brady-tachyarrhythmias, atrioventricular block and sinus arrest. In this report we describe a patient in whom the swallowing of any material could induce syncope due to transient sinus arrest.

Patient Description

A 16 year old Arab athletic student was admitted to hospital in February 1999 because of syncope. An hour prior to admission, while swallowing a large mouthful of carbonated beverage he experienced a severe pain of a "bursting" nature in the lower retrosternal region and collapsed pulseless to the floor for a few seconds. A trained nurse witnessed this event. Almost immediately he regained consciousness and felt perfectly fit and well without any sequelae. On further questioning, it appeared that since 1995 he had suffered three episodes of dizziness with near syncope lasting about 5 seconds, almost immediately after quickly drinking cold carbonated or uncarbonated beverages. Following one of these episodes he had recovered in another hospital, where investigation that included clinical examination, thyroid, renal and hepatic functions revealed no abnormal findings.

The patient was accustomed to jogging every morning for one hour, with no adverse sensation. There was no history of nausea, vomiting, regurgitation, epigastric burning, diarrhea, palpitation, dyspnea, edema, fatigue, emotional disturbance or weight loss. The family history was non-contributory.

We performed carotid Doppler studies, 24 hour Holter monitoring, cranial magnetic resonance imaging scan, computed tomographic scan, electroencephalogram, and echocardiogram, all of which were normal. In addition, the results of a treadmill exercise test, tilt-table test, electrophysiologic study, coronary angiography, and gastrointestinal X-ray studies were all negative. Five minutes after admission there were no abnormal findings on extensive physical examination. Basic laboratory studies and glucose tolerance test were normal. The routine 12 lead electrocardiogram showed sinus rhythm; the P-R was 0.14 seconds. Carotid-sinus massage was negative, and eyeball pressure did not induce symptoms or any ECG abnormality.

The patient gave the same history as described above, which reinforced the highly probable correlation between symptoms and the rapid swallowing of large amounts. We therefore applied the following challenge test: the patient was instructed to drink three glasses of iced tea, alternating with a hot drink, a carbonated beverage and solid food, at 20 minute intervals while lying in bed and being monitored by an ECG. After each glass the patient complained of substernal burst within 3 seconds after swallowing; he developed marked pallor that was accompanied by approximately 5 seconds of complete atrioventricular asystole followed by several ectopic ventricular beats that reversed spontaneously to normal sinus rhythm with disappearance of the symptoms [Figure].

Symptoms and ECG findings were totally eliminated by 1 mg atropine given intravenously, suggesting that the efferent and afferent limbs of the reflex arc were located in the vagus nerves. Routine upper gastrointestinal X-ray studies

ECG = electrocardiography

Figure. ECG monitoring during the swallowing of a glass of iced tea, followed by 5 seconds of atrioventricular asystole, ventricular premature beats, and then reversal to normal sinus rhythm.

showed no abnormality of esophageal motility. The patient was well during the repeated challenge tests, as well as during observation for another 72 hours while under treatment with anticholinergic agents. In view of the young age of our patient and the lack of previous experience of such cases, and despite the apparent successful treatment with an anticholinergic drug, we decided to implant a permanent transvenous demand VVI pacemaker (Medtronic, USA) because of the possible lethal complication that could occur in the event of syncope recurrence.

Comment

Syncope is usually the result of an extreme fall in blood pressure, due to malignant brady- or tachyarrhythmia, or standstill of the heart. The precipitating causes of syncope are protean. Syncopal attacks produced by hypersensitivity of the carotid sinus and often potentiated by organic heart and cerebral vessel disease are not uncommon [1,2]. At least 30 cases of cardiac syncope resulting from visceral reflexes have been reported [3–5]. Most of them were associated with structural abnormalities of either the esophagus (hiatus hernia, gastric and esophageal diverticulae, achalasia or others) or the heart (inferior and posterior myocardial infarction, digoxin toxicity, and rheumatic carditis). On other occasions no organic disease could be detected [3]. Syncope in the latter cases was suggested to be related to deglutition itself [2–5].

"Swallowing syncope," a term applied to loss of consciousness during or immediately after swallowing, is a dysautonomic syndrome associated with hypersensitive vagal activation induced by esophageal stimulation, producing the so-called upper gastrointestinal cardiac vagovagal reflexes, which by evoking sympathetic inhibition with vagal efferent activation can induce a variety of brady-tachyarrhythmias. These include sinus bradycardia and tachycardia, premature ventricular beats, sino-atrial block, atrial fibrillation, supraventricular arrhythmias, first-, second- and third-degree atrioventricular block, ventricular fibrillation, and asystole, producing a sharp fall in cardiac output sufficient to cause syncope [2–5]. As stated in previous studies, swallow syncope could be attributed to the ingestion of food, carbonated beverage, and hot, cold or iced liquids [3–5].

No etiological organic disease has been diagnosed that could explain our patient's complaint. We believe that he has an idiopathic hypersensitive esophagocardiac vagovagal reflex, which was initiated when the esophagus was distended to an extreme level by a rapid and large carbonated beverage bolus. Our report appears to be unique and unusual in that it is the first case in which almost every swallowed material induced sinus asystole followed by syncope in a patient with a hypersensitive esophagocardiac vagovagal reflex.

In conclusion, this rare clinical case indicates that early diagnosis assures successful treatment and outcome and obviates uncomfortable and expensive tests. This is especially true after careful and complete history and physical examination. Educational instruction, such as avoiding specific beverages and forceful drinking, together with anticholinergic medication, is considered to be the first choice of therapy in such cases. In fact, we could find no other case reports on deglutition syncope and implantation of pacemaker. Neither have unified guideline criteria for pacemaker implantation in patients with deglutition syncope been published. The question as to whether we can treat these patients, especially those who are young, with anticholenergic drugs and educational measures only, or whether pacemaker implantation is always necessary, needs further investigation and clarification.

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